
```

% varying wrt SNR
% k1 and k2 kappa values
% g1 and g2 are SNR values
% y is gamma th
% p is phi
clear;
%k1=input("Enter value for kds");
%k2=input("enter value for ksd");
k1=2;
k2=2;
%z=1/exp(k1+k2);
alpha= 0.5;
s=0;
h= alpha/(1-alpha);
a1=1;
a2=1;

k=1;
res=1;
hold on;
fprintf("Rician k=2")
for snr_db= 0 :5 :30
snr= 10^(0.1*snr_db);

p= a1*a2/(h*snr);
for i= 1:10
for j= 1:10
s= s+ (((k1^(i-1))*(k2^(j-1)))/
((factorial(i-1)*factorial(j-1))^2))*meijerG([1,1,-i+1,-j+1],[0,1],
[1,1,0],[0],1/p);
end
end
res= s*exp(-k1-k2)/(log(2));
%disp( " g1 value " +g1); %disp( " a1 value " +a1);
%disp( " res is "+res);
fin(k)=res;
res=1;
s=0;
k=k+1;
end
qw= 0:5:30;
plot(qw,fin)
%set(gca,'Yscale','log')
grid on
xlabel("SNR (dB)")
ylabel("Ergodic Capacity")
title("Ergodic Capacity vs SNR for various fading channels
(alpha=0.5)")

k1=0;
k2=0;
s=0;

```

```

h= alpha/(1-alpha);
a1=1;
a2=1;
m=2;
k=1;
res=1;
fprintf("nakagami m=2")
for snr_db= 0 :5 :30
snr= 10^(0.1*snr_db);
p= a1*a2/(h*snr);
for i= 1:10
for j= 1:10
s= s+ (((k1^(i-1))*(k2^(j-1)))/((factorial(i+m-1)*factorial(j
+m-1))*((factorial(i-1)*factorial(j-1)))))*meijerG([1,1,-i-m+1,-j-m
+1],[0,1],[1,1,0],[0],1/p);
end
end
res= s*exp(-k1-k2)/(log(2));
fin(k)=res;
res=1;
s=0;
k=k+1;
end
qw= 0:5:30;
plot(qw,fin)

k1=0;
k2=0;
s=0;
h= alpha/(1-alpha);
a1=1;
a2=1;
k=1;
res=1;
fprintf("Rayleigh")
for snr_db= 0 :5 :30
snr= 10^(0.1*snr_db);
p= a1*a2/(h*snr);
for i= 1:10
for j= 1:10
s= s+ (((k1^(i-1))*(k2^(j-1)))/
((factorial(i-1)*factorial(j-1))^2))*meijerG([1,1,-i+1,-j+1],[0,1],
[1,1,0],[0],1/p);
end
end
res= s*exp(-k1-k2)/(log(2));
fin(k)=res;
res=1;
s=0;
k=k+1;
end
qw= 0:5:30;
plot(qw,fin)

```

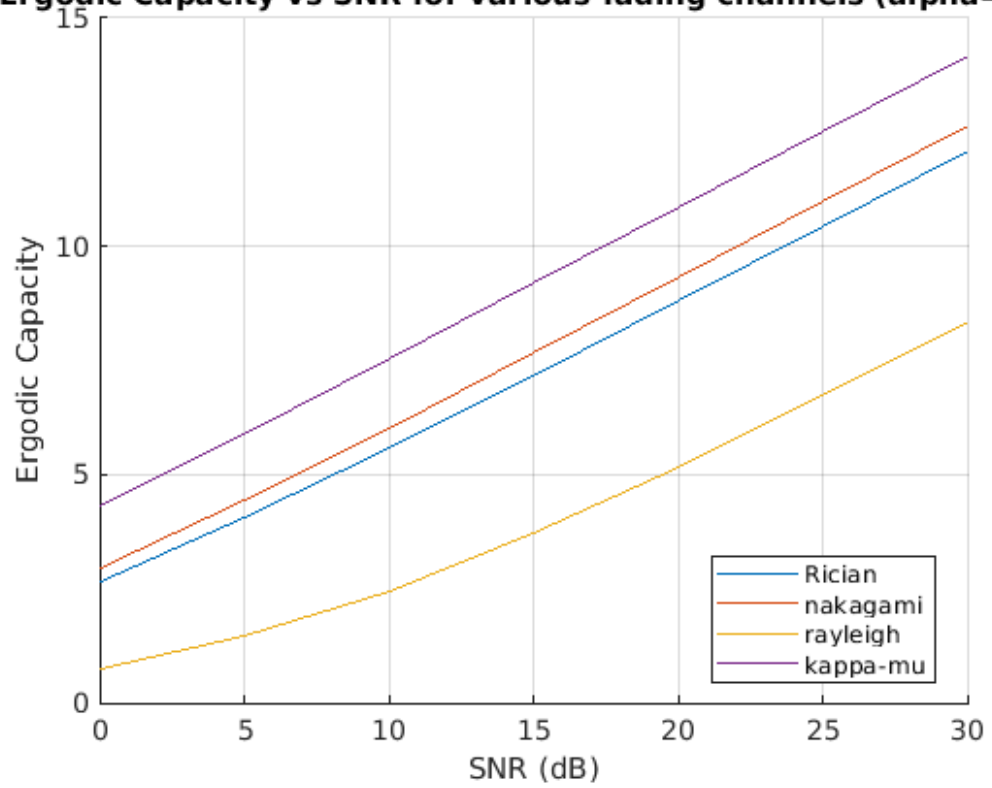
```

k1=2;
k2=2;
%z=1/exp(k1+k2);
alpha= 0.5;
s=0;
h= alpha/(1-alpha);
a1=1;
a2=1;
k=1;
res=1;
m=2;
fprintf("K-Mu k=2 , Mu=2")
for snr_db= 0 :5 :30
snr= 10^(0.1*snr_db);
p= a1*a2/(h*snr);
for i= 1:10
for j= 1:10
s= s+ ((k1^(i-1))*(k2^(j-1)))/
((factorial(i-1)*factorial(j-1))*(factorial(i+m-1)*factorial(j
+m-1)))*meijerG([1,1,-i+1-m,-j+1-m],[0,1],[1,1,0],[0],1/p);
end
end
res= s*exp(-k1-k2)/(log(2));
fin(k)=res;
res=1;
s=0;
k=k+1;
end
qw= 0:5:30;
plot(qw,fin)
legend({'Rician','nakagami','rayleigh','kappa-mu'},'Location','best')

Rician k=2nakagami m=2RayleighK-Mu k=2 , Mu=2

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Ergodic Capacity vs SNR for various fading channels (alpha=0.5)



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